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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,274	Applicant(s) DELATTRE ET AL.	
	Examiner BJ Forman	Art Unit 1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 25-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

FINAL ACTION

Status of the Claims

1. This action is in response to papers filed 6 January 2010 in which claims 1, 16 and 24 were amended. The amendments have been thoroughly reviewed and entered. The previous rejections in the Office Action dated 6 August 2009 under 35 U.S.C. 112, second paragraph are withdrawn in view of new grounds for rejection. The previous rejection under 35 U.S.C. 102(e) over Papkovsky is withdrawn in view of Applicant's comments on page 8 of the response.

The previous objection to Claim 23 is maintained. The previous rejections over Brennan under 35 U.S.C. 102(b) and 35 U.S.C. 103 are maintained. The previous rejection under non-statutory double patenting is maintained.

Applicant's arguments have been thoroughly reviewed and are discussed below.

Claims 1-24 are under prosecution.

Claim Objections

2. Applicant is advised that should claim 1 be found allowable, Claim 23 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

This rejection is maintained from the previous Office Action.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5, 7-9, 11, 16, 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Brennan (U.S. Patent No. 6,210,894, issued 3 April 2001).

Regarding Claim 1, Brennan teaches a work box (3) provided with opening for introducing and extracting liquids (1, 2) a substrate in the work box comprising an active surface that is non-wetting (6) a plurality of work zones on the active surface, each surrounded by a border that is non-wetting wherein the borders are not touching and have no common edge (Fig. 3) wherein the opening are arranged for introducing fluid to cover the surface of the substrate (flooded) and the borders have a geometry such that when the liquid of interest is extracted, a drop of liquid remains in contact with the work zone (Column 7, lines 37-59 and Column 8, lines 45-57). It is noted that the instant specification (§ 83-87) defines the means for introducing and extracting liquids encompasses openings.

Regarding Claim 2, Brennan teaches the device wherein the work zone is in the same plane as the active surface (Fig. 3).

Regarding Claim 3, Brennan teaches the device wherein the work zone is a zone of chemical interaction with the drop captured by its borders (Column 7, lines 37-59).

Regarding Claim 5, Brennan teaches the device wherein the work zone is a chemical sensor (Example 4, Column 9).

Regarding Claim 7, Brennan teaches the device wherein the work zone is used to detect a biological species (Example 4, Column 9). It is noted that the claim defines an intended use for the device. While Brennan teaches the use as recited, Applicant is advised that the intended use recited in the claim does not further limit the device of Claim 1.

Regarding Claims 8-9, Brennan teaches the device wherein the work zone is functionalized with an oligonucleotide probe to interacting with a target (Example 4, Column 9).

Regarding Claim 11, Brennan teaches the device wherein the substrate is glass (Column 7, lines 14-15).

Regarding Claim 16, Brennan teaches the device wherein the borders are wetting for the liquid of interest as illustrated by the droplet contact of the border (Fig.3).

Regarding Claims 23 and 24, Brennan teaches the device of Claim 1 as discussed above. Claims 23 and 24 do not define any additional structures. Therefore Brennan also anticipates the system and chip of Claims 23 and 24.

Regarding Claim 25, Brennan teaches the device wherein the chip is a nucleic acid chip (Examples 1-4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4, 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brennan (U.S. Patent No. 6,210,894, issued 3 April 2001) in view of Heller (U.S. Patent No. 6,017,696, issued 25 January 2000).

Regarding Claims 4, 12-15, Brennan teaches a work box of Claim 1 as discussed above. Brennan does not teach an electrochemical microcell wherein the substrate comprises an organic polymer and metal and wherein the work zone has a rectangular/square shape.

However, Heller teaches these elements wherein substrates comprise a metal (Column 15, lines 28-30) wherein polycarbonate substrates are preferred because they have the lowest background and Column 34, lines 34-35) and further teaches that it is advantageous to construct an electrochemical microcell in order to extract specific molecules from a sample (Column 12 lines 35-54). Heller further teaches numerous advantages provided by the electrodes including stringency control, rapid transport target molecules and rapid removal of non-specific materials (Column 24, 19-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Brennan by constructing an electrochemical microcell in

Art Unit: 1634

order to extract specific molecules from a sample as desired in the art (Heller, Column 12, lines 35-45).

Furthermore, It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the circular work zones of Brennan by providing rectangular/square work zones as taught by Heller. The claimed work zone shapes would have been an obvious modification of the Brennan work zones because the ordinary artisan would have expected the work zones to function equally regardless the shape.

The courts have stated that claimed dimensions of a known device do not distinguish over the prior art device when the claimed device would not perform differently from the prior art device. *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brennan (U.S. Patent No. 6,210,894, issued 3 April 2001) in view of Heller (U.S. Patent No. 6,017,696, issued 25 January 2000) and Ikeda et al (U.S. Patent No. 5,582,697, issued 10 December 1996).

Regarding Claim 6, Brennan teaches the device of Claim 1 and Heller teaches the advantages of using electrode work zones as discussed above regarding Claim 4. While Heller does not specifically teach that the electrodes actuate, Ikeda teaches a

Art Unit: 1634

similar biosensor wherein the sample detection occurs via electrode actuator (Example 3). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the actuation of Ikeda to the device of Brennan and/or Heller. One of ordinary skill in the art would have been motivated to do so based on its well-known use in the art as taught by Ikeda.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brennan (U.S. Patent No. 6,210,894, issued 3 April 2001) in view of Goldberg et al (U.S. Patent No. 5,959,098, issued 28 September 1999).

Regarding Claim 10, Brennan teaches the device of Claim 1 as discussed above wherein the work zones are wetting for the liquid of interest (Example 4) but does not teach blank zone which are non-wetting. However, hybridization arrays having blank features were well known in the art at the time the invention was made as taught by Goldberg who teaches the "standard optimization chip" has blank features (Column 7, lines 52-61). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the blank features of Goldberg to the array of Brennan. The ordinary artisan would have been motivated to do so based on teaching of Goldberg and for the obvious benefit of optimizing the chip.

9. Claims 12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brennan (U.S. Patent No. 6,210,894, issued 3 April 2001) in view of Papkovsky et al (WO 03/059518, filed 16 January 2003).

Regarding Claims 12 and 17, Brennan teaches the device of Claim 1 wherein the pattern is provided by patterned removal of fluorosiloxane (Example 1) but does not teach patterning by stamping or molding. However Papkovsky teaches a similar device wherein the pattern substrate is provided by molding organic polymers (page 6, lines 8-14). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the patterning of Brennan by using the injection molding of Papkovsky. One of ordinary skill in the art would have been motivated to do so, with a reasonable expectation of success, based on the well-known practice taught by Papkovsky. The artisan would have been further motivated to do so based on available manufacturing tools.

10. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brennan (U.S. Patent No. 6,210,894, issued 3 April 2001) in view of Yuen (U.S. Patent Application Publication No. 2002/0168624, published 14 November 2002).

Regarding Claims 18-22, Brennan teaches the device of Claim 1 as discussed above. Brennan also teaches inlet (1) and outlet ports (2) wherein the inlet is connect to the reagent manifold (Fig. 7). Brennan further teaches the assembly is enclosed in a glove box which can be evacuated or purged with argon e.g. positive displacement or

Art Unit: 1634

flushing (Column 8, lines 58-64) which clearly suggests a pump and/or vacuum is attached to evacuate or purge the chamber. While the reference does not specifically teach a pump and vacuum these tools were well known in the art for evacuating and purging hybridization chambers as taught by Yuen (¶ 35, 42). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the well known pump and vacuum to the device of Brennan. One of ordinary skill in the art would have been motivated to do so based on the well known use of these elements as taught by Yuen (¶ 35, 42).

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 1634

12. Claims 1-25 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-40 of copending Application No. 10/576,345 (2007/0207055). Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to a device comprising at least one liquid-capture zone surrounded by non-wetting borders, means for supplying and removing liquid to the capture zone all within a box. The claim sets merely differ in the arrangement of limitations within the claim sets. For example, Claim 1 of the instant specification defines a "box" while Claim 33 of the '345 application provides this embodiment. The different arrangement of limitations in the '345 claims does not patentably distinguish the instantly claimed device over that of the '345 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

Applicant argues that Brennan fails to disclose the instantly claimed borders. Applicant asserts that the claimed borders are defined in the instant specification (page 12, lines 14-18) as structures in relief formed on the substrate in order to create unjoined depressions that are not embedded in the substrate body, but are formed on the surface. Applicant acknowledges that Brennan's surface is formed by a binding site surrounded by a fluoroalkylsilane site, but argues that the surface having the binding site

Art Unit: 1634

and fluoroalkylsilane site are flat and therefore does not constitute a structure in relief as required by the claim.

The argument has been considered but is not found persuasive. As noted by Applicant, the surface of Brennan comprises a binding site surrounded by a fluoroalkylsilane surface. The method by which the surface of Brennan is created is provided in Example 1 and Figure 2. That method includes coating the substrate with a resist and photolithography to remove coating to expose binding sites (Column 2 and Example 1). The instant specification (page 15, first paragraph) defines the process for making the instantly claimed borders having relief structures:

The borders are made according to the following rules: they are wall-shaped relief structures defining a closed perimeter, with unjoined edges from one border to another. These borders may be produced by any method known to a person skilled in the art to shape the abovementioned materials of the substrate, or by any method known to a person skilled in the art to shape reliefs on a surface, particularly in the field of on-chip laboratories and analysis Microsystems, for example, by deposition of material(s) and etching. By way of example, among the methods known to a person skilled in the art usable to produce the borders according to the present invention, mention can be made of: direct etching of the substrate; deposition of a material on the surface of a plane substrate, for example by coating, evaporation, spraying or electroplating, followed by etching in combination with a conventional photolithography method, for example by coating with a resist, exposure and definition of features, or etching; direct definition of features by photolithography in photosensitive polymers, for example in the case of photoresists; moulding or stamping, for example of plastics or of the substrate forming the active surface. (emphasis added)

The specification specifically teaches that relief structures forming the borders are made by depositing a photosensitive material onto a substrate and removing portions of the material to form reliefs within the material. Brennan teaches coating the substrate with a resist and photolithography to remove coating to expose binding sites (Column 2 and Example 1). It is noted that the instant specification does not limit the border by height or dimension so as to define the border over that taught by Brennan. Therefore, the borders of Brennan are encompassed by the instantly claimed borders.

The previous rejection over Papkovsky is withdrawn in view of Applicant's comments on page 8 of the response.

Regarding Claims 4, 12-15, Applicant argues that Heller does not cure the deficiencies of Brennan. The argument is not persuasive because Brennan is not deemed deficient.

Regarding Claim 6, Applicant argues that Ikeda does not cure the deficiencies of Brennan. The argument is not persuasive because Brennan is not deemed deficient.

Regarding Claim 10, Applicant argues that Goldberg does not cure the deficiencies of Brennan. The argument is not persuasive because Brennan is not deemed deficient.

Regarding Claims 12, 17, Applicant argues that Papkovsky does not cure the deficiencies of Brennan. The argument is not persuasive because Brennan is not deemed deficient.

Regarding Claims 18-22, Applicant argues that Yuen does not cure the deficiencies of Brennan. The argument is not persuasive because Brennan is not deemed deficient.

Applicant has not provided any arguments to traverse the rejection under non-statutory double patenting. The rejection is therefore maintained and made Final.

Conclusion

No claim is allowed.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

Art Unit: 1634

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nguyen can be reached on (571) 272-0731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Primary Examiner
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